	Application No.	Applicant(s)
Notice of Allowability	09/687,130	COCHRAN ET AL.
	Examiner	**Art Unit**	
	Baoquoc N. To	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to _04/18/2005_.

2. ☒ The allowed claim(s) is/are _1-12 and 20-31_.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _05/11/2005_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _05/11/2005_ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

JEAN M. CORRIELUS
PRIMARY EXAMINER

U.S. Patent and Trademark Office

PTOL-37 (Rev. 1-04)   **Notice of Allowability**   Part of Paper No./Mail Date 20050511

DETAILED ACTION

1.   Claims 1, 3, 5-7, 9, 11-13, 20, 22-26 and 28-31 are amended in the amendment

filed on 04/18/2005. Claims 1-13 and 15-31 are pending in this application.

Drawings

2.   The drawings filed on 10/12/2005 are acceptable subject to correction of the

informalities. Please resubmit Formal drawing before the issue fee. In order to avoid

abandonment of this application, correction is required in reply to the Office action. The

correction will not be held in abeyance.

EXAMINER'S AMENDMENT

3.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Robert W. Bergstrom with Reg. No. 39,906 on May 11, 2005.

Please replace and cancel these claims as follow:

Please replace claim 1 with;--"1. A method for backing up a computer-readable

object stored on a first logical unit of a mass-storage device, the method comprising:

when the object is not currently mirrored to a mass storage device, creating a

mirror for the object on a second logical ' unit of the mass-storage device;

when the object and the mirror for the object are split, resyncing the object with the mirror for the object;

splitting the object and the mirror for the object so that the mirror for the object becomes a backup copy of the object and so that I/O requests directed to the object are not automatically directed to the mirror for the object;

retrieving a first instance of a current timestamp from associated, by the mass-storage device with the second logical unit and saving it as a saved timestamp;

updating, by the mass-storage device. the current timestamp associated with the second logical unit upon executing any I/O operation directed to the second logical unit that alters data stored on the second logical unit;

when the object is determined to need to be restored from the backup copy,

retrieving a second instance of the current timestamp associated with the second logical unit;

comparing the retrieved second instance of the current timestamp associated with the second logical unit to the saved timestamp; and

when the second instance of the current timestamp associated with the second logical unit is equal to the saved timestamp, copying the backup copy to the first logical unit."--

Please replace claim 7 with;--"7. A method for backing up a computer-readable object stored on a first logical unit of a mass-storage device, the method comprising:

when the object is not currently mirrored to a mass storage device, creating a mirror for the object on a second logical unit of the mass-storage device;

when the object and the mirror for the object are split, resyncing the object

with the mirror for the object;

splitting the object and the mirror for the object so that the mirror for the object

becomes a backup copy of the object and so that 1/0 requests directed to the object are

not automatically directed to the mirror for the object;

retrieving a first instance of a current count associated, by the mass-storage

device. with from the second logical unit and saving it as a saved count;

incrementing, by the mass-storage device. the current count associated with

the second logical unit upon executing any la/0 operation directed to the second

logical unit that alters data stored on the second logical unit;

when the object is determined to need to be restored from the backup copy,

retrieving a second instance of the current count associated with the second

logical unit comparing the retrieved second instance of the current count associated

with the second logical unit to the saved count; and

when the second instance of the current count associated with the

second logical unit is equal to the saved count, copying the backup copy to the first

logical unit."—

Please cancel claim 13.

Please cancel claim 15.

Please cancel claim 16.

Please cancel claim 17.

Please cancel claim 18.

Please cancel claim 19.

Please replace claim 20 with;--"20.   A mass storage device comprising:

data storage media;

logical unit s that write data to the media and read data from the media;

a memory component; and

a controller that backs up a computer-readable object stored on a first logical unit

by

when the object is not currently mirrored to another logical unit, creating a mirror

for the object on a second logical unit;

when the object and the mirror for the object are split, resyncing the object with

the mirror for the object;

splitting the object and the mirror for the object so that the mirror for the object

becomes a backup copy of the object and so that 1/0 requests directed to the object are

not automatically directed to the mirror for the object;

retrieving a first instance of a current timestamp associated, by the

logical unit and saving it as a saved controller with from the second timestamp;

updating, by the controller, the current timestamp associated with the

second logical unit upon executing any I/0 operation directed to the second logical unit

that alters data stored on the second logical unit; and

when the object is determined to need to be restored from the backup copy,

retrieving a second instance of the current timestamp associated with the second

logical unit;

comparing the retrieved second instance of the current timestamp associated

with the second logical unit to the saved timestamp; and

when the second instance of the current timestamp associated with the second

logical unit is equal to the saved timestamp, copying the backup copy to the first logical

unit."—

Place claim 26 with;--"26.   A mass storage device comprising:

data storage media;

logical unit s that write data to the media and read data from the media;

a memory component; and

a controller that backs up a computer-readable object stored on a first logical

unit by:

when the object is not currently mirrored to another logical unit, creating a mirror

for the object on a second logical unit;

when the object and the mirror for the object are split, resyncing the object with

the mirror for the object;

splitting the object and the mirror for the object so that the mirror for the object

becomes a backup copy of the object and so that I/0 requests directed to the object are

not automatically directed to the mirror for the object;

retrieving a first instance of a current count associated, by the controller, with

from the second logical unit and saving it as a saved count;

incrementing by the controller, the current count associated with the second

logical unit upon executing any I/0 operation directed to the second logical unit that

alters data stored on the second logical unit; and

when the object is determined to need to be restored from the backup copy,

retrieving a second instance of the current count associated with the second

logical unit;

comparing the retrieved second instance of the current count associated with the

second logical unit to the saved count; and

when the second instance of the current count associated with the second logical

unit is equal to the saved count, copying the backup copy to the first logical unit."—

Allowable Subject Matter

4.   Claims 1-12 and 20-31 are allowed over prior art made of records.

The following is an examiner's statement of reasons for allowance:

As to claim 1, none of the known prior art alone or incombination neither teach

nor suggest "when the object is determined to need to be restored from the backup

copy, retrieving a second instance of the current timestamp associated with the second

logical unit; comparing the retrieved second instance of the current timestamp

associated with the second logical unit to the saved timestamp; and when the second

instance of the current timestamp associated with the second logical unit is equal to the

saved timestamp, copying the backup copy to the first logical unit" and in conjunction

with "when the object is not currently mirrored to a mass storage device, creating a

mirror for the object on a second logical ' unit of the mass-storage device; when the

object and the mirror for the object are split, resyncing the object with the mirror for the

object; splitting the object and the mirror for the object so that the mirror for the object

becomes a backup copy of the object and so that I/0 requests directed to the object are

not automatically directed to the mirror for the object; retrieving a first instance of a

current timestamp from associated, by the mass-storage device with the second logical

unit and saving it as a saved timestamp; updating, by the mass-storage device. the

current timestamp associated with the second logical unit upon executing any I/0

operation directed to the second logical unit that alters data stored on the second

logical unit."

Claims 2-6 are depended on claim 1; therefore, they are allowed under the same

reason.

Claim 7 is the same scope of claim 1; therefore, it is allowed under the same

reason as to claim 1.

Claims 8-12 are depended on claim 7; therefore, they are allowed under the

same reason as to claim 7.

Claim 20 is the computer software product to perform the method of claim 1,

therefore, it is allowed under the same reason as to claim 1.

Claims 21-25 are depended on claim 20; therefore, they are rejected under the

same reason as claim 20.

Claim 26 is a computer software product to perform the method of claim 7;

therefore, it is allowed under the same reason as to claim 7.

Claims 27-31 depended on claim 26; therefore, they are rejected under the same reason as claim 26.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cabrera et al.   (US. Patent No. 6,453,325 B1)   Patent date: 09/17/2002.

Method And Means For Backup And Restoration Of A Database System Linked To A System For Filing Data.

Beavin et al.   (US. Patent No. 6,038,659)   Patent date: 03/14/2000.

System For Data Structure Loading With Concurrent Image Copy.

NPL

Walter et al. (A Survey of Techniques for Synchronization and Recovery in Decentralized Computer Systems.

ACM computing Surveys, ACM Press, 1981, page 149-183.

Contact Information

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:
          Commissioner of Patents and Trademarks
          Washington, D.C. 20231.

The fax numbers for the organization where this application or proceeding is assigned are as follow:
          (703) 872-9306 [Official Communication]

Baoquoc N. To
May 11, 2005

JEAN M. CORRIELUS
PRIMARY EXAMINER